AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of operating a plasma fuel reformer having a first electrode and second electrode spaced apart from the first electrode, the method comprising the steps of:

generating a plasma arc between the first and second electrodes,

advancing a first air/fuel mixture having a first air-to-fuel ratio into the ~~fuel reformer~~ plasma arc,

determining if a soot purge is to be performed and generating a purge-soot signal in response thereto, and

advancing a second air/fuel mixture having a second air-to-fuel ratio into the ~~fuel reformer~~ plasma arc in response to generation of the purge-soot signal, wherein the second air-to-fuel ratio is greater than the first air-to-fuel ratio.

2. (Currently Amended) The method of 1, wherein the determining step comprises [[the]] a step of sensing the amount of soot within the plasma fuel reformer.

3. (Currently Amended) The method of claim 2, wherein the sensing step includes the step of generating a soot accumulation control signal when the amount of soot within the plasma fuel reformer reaches a predetermined accumulation level, and wherein the step of advancing the second air/fuel mixture includes advancing the second air/fuel mixture in response to generation of the soot accumulation control signal.

4. (Currently Amended) The method of claim 1, wherein the step of advancing the second air/fuel mixture includes advancing the second air/fuel mixture for a predetermined period of time to purge the plasma fuel reformer of soot.

5. (Original) The method of claim 1, wherein the second air/fuel mixture is substantially devoid of fuel.

6. (Original) The method of claim 1, wherein the second air/fuel mixture is devoid of fuel.

7. (Currently Amended) The method of claim 1, wherein the determining step comprises determining if a predetermined period of time has elapsed since the plasma fuel reformer was last purged of soot and generating a time-lapsed control signal in response thereto, and the step of advancing the second air/fuel mixture comprises advancing the second air/fuel mixture in response to generation of the time-lapsed control signal.

8. (Currently Amended) The method of claim 1, further comprising the step of advancing a third air/fuel mixture having the first air-to-fuel ratio into the ~~fuel reformer~~ plasma arc subsequent to the step of advancing the second air/fuel mixture.

9. (Currently Amended) The method of claim 1, wherein the determining step comprises detecting a plasma fuel reformer shutdown request control signal, and the step of advancing the second air/fuel mixture comprises advancing the second air/fuel mixture in response to detection of the plasma fuel reformer shutdown request control signal.

10. (Currently Amended) The method of claim 1, wherein the determining step comprises generating a high-load control signal when an engine associated with the plasma fuel reformer experiences a high load condition, and the step of advancing the second air/fuel mixture comprises advancing the second air/fuel mixture in response to generation of the high-load control signal.

11.-16. (Canceled)

17. (Original) A method of operating a fuel reformer comprising the step of:

advancing air in the absence of fuel into a housing of the fuel reformer so as to combust soot present therein.

18. (Original) The method of claim 17, further including the step of:

advancing a mixture of fuel and air into the fuel reformer housing prior to the step of advancing air in the absence of fuel into the fuel reformer housing.

19. (Original) The method of claim 17, wherein the advancing step includes ceasing operation of a fuel injector.

20. (Original) The method of claim 17, wherein the advancing step is performed at predetermined time intervals.

21. (Original) The method of claim 17, further including the step of advancing air in the presence of fuel into the fuel reformer housing subsequent to completion of the step of advancing air in the absence of fuel.

22. (Original) The method of claim 17, further comprising the step of determining the amount of soot within the fuel reformer housing, and wherein the advancing step includes advancing air in the absence of fuel if the amount of soot within the fuel reformer housing is greater than or equal to a predetermined amount.

23. (Original) The method of claim 17, further comprising the step of determining if a predetermined period of time has elapsed since soot was last purged from the fuel reformer, and wherein the advancing step includes advancing air in the absence of fuel when the predetermined period of time has lapsed.